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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,027	07/30/2003	Joel M. Dry	OPTOLUM-005	9520
7590 01/11/2008				
DONALD J. LENKSZUS		EXAMINER		
PO BOX 3064		HO, TU TU V		
CAREFREE, AZ 85377-3064				
		ART UNIT	PAPER NUMBER	
		2818		
		MAIL DATE	DELIVERY MODE	
		01/11/2008	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/631,027

Applicant(s)

DRY, JOEL M.

Examiner

Tu-Tu Ho

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14-33, 35-54 and 56-63 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-33, 35-54 and 56-63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**1. Claims 1-12, 14-33, 35-54, and 56-63** are rejected under 35 U.S.C. §103(a) as being unpatentable over Arndt et al. U.S. Patent 6,848,819 (the '819 reference, cited in a previous office action) in view of Bohler al. U.S. Patent 6,799,864 (cited by Applicant).

Referring to **claims 1-12, 14-33, 35-54, and 56-63**, the '819 reference discloses in Fig. 2B, a cross-section view of a tubular light source, and respective portions of the specification a light source as claimed including a flexible circuit (1) wrapping around a metal tube for mounting light emitting diodes (LEDs) but fails to disclose: (i) that the metal tube is an elongate metal tube, i.e., a metal tube having more length than width as defined by Applicant – see “Applicant Arguments/Remarks Made in an Amendment” and “Specification” filed 05/01/2007 – and as required by **claims 1-2, 22-23, and 43-44**; and (ii) apertures in said flexible circuit for receiving said LEDs as required in **claims 15, 36, and 57**, and consequently further fails to disclose that each of said LEDs is disposed in a corresponding one of said missing apertures so as to be affixed in thermally conductive contact with said tube as required in **claims 16, 21, 37, 42, 58, and 63**.

Specifically, in reference to **claims 1-12, 14-33, 35-54, and 56-63**, the '819 reference discloses a light source, which is a radiation emitting semiconductor device and which is also a radiation emitting solid state device, substantially as claimed including:

a thermally conductive member (“tubularly shaped, cylindrical, hollow cooling member 3”, Fig. 2B, col. 3, line 55, through col. 4, line 61, particularly col. 4, lines 1-23 and lines 41-61, said cooling member being fabricated of a metal such as copper or aluminum, col. 4, lines 5-8) for carrying a flexible printed circuit (flex PCB 1, col. 4, line 45, in re **claims 14, 20, 35, 41, 56, and 62**), which in turn carries a plurality of solid state light sources (LED 2, in re **claims 1-2**), which are radiation emitting semiconductor solid state devices (LED 2, in re **claims 22-23 and 43-44**), and which are situated on different planes that constitute the tubularly shape; and

Art Unit: 2818

electrical conductors, which are not shown in Fig. 2B, for supplying electrical power to said solid state light sources;

said thermally conductive member being configured to conduct heat away from said solid state light sources (LED 2) or said radiation emitting semiconductor devices (LED 2) or said radiation emitting solid state devices (LED 2) to fluid contained by said thermally conductive member (col. 4, lines 41-61);

wherein:

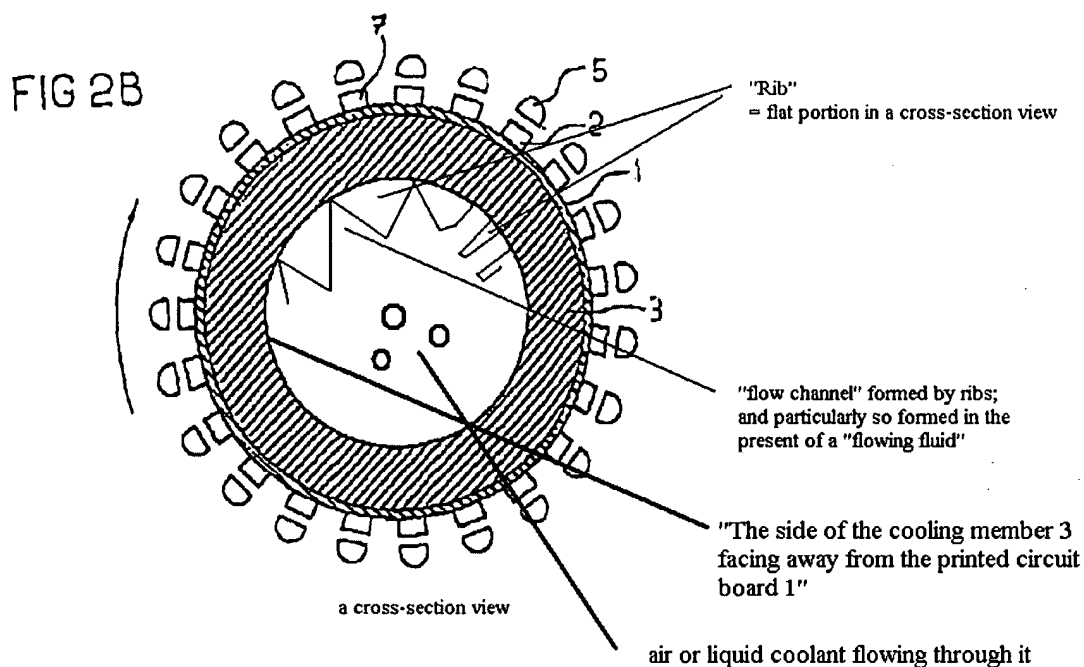
in re **claims 3, 24, and 45**, said fluid comprises air (col. 4, lines 60-62);

in re **claims 4, 9, 25, 30, 46, and 51**, said thermally conductive member (3) comprises an extrusion (“cooling ribs and/or a rough surface”, col. 2, lines 55-62,);

in re **claims 10, 31, and 52**, said extrusion is an aluminum extrusion (because said extrusion is formed from said thermally conductive member 3, which is formed of aluminum – col. 4, lines 5-9);

in re **claims 5, 11, 26, 32, 47, and 53**, said thermally conductive member (3) is a tubular member (“tubularly shaped”, col. 4, lines 45-50), in re **claims 6, 12, 27, 33, 48, and 54**, but would be obvious to be changed to a polygon cross-section as claimed because the shape differences are considered obvious and are not patentable unless unobvious or unexpected results are obtained from these changes;

in re **claims 8, 17-18, 29, 38-39, 50, and 59-60**, cooling ribs and/or suitable surface structure or roughening surface which is blackened (col. 4, lines 17+), when applied to the tubularly shaped cooling member 3 (col. 4, lines 45+) having “air or a liquid coolant flowing through it” (col. 4, lines 59-62), are interpreted as flow channels for a thermal transfer media disposed therein; and furthermore, said cooling ribs as interpreted are seen as “cross-section having flat portions” as recited in **claims 7, 28, and 49** in the cross-section view of Fig. 2B, reproduced - and as interpreted above – below or next page.



**However**, as noted above, the '819 reference fails to disclose: (i) that the metal tubular substrate is an elongate metal tube substrate as required by **claims 1-2, 22-23, and 43-44**; and (ii) apertures in said flexible circuit for receiving said LEDs as required in **claims 15, 36, and 57**, and consequently further fails to disclose that each of said LEDs is disposed in a corresponding one of said missing apertures so as to be affixed in thermally conductive contact with said tubular substrate as required in **claims 16, 21, 37, 42, 58, and 63**.

**Nevertheless**, for (ii), Bohler teaches forming apertures (122,124,126, Fig. 3) in a flexible circuit ("circuit board" 120, col. 4, lines 1-25) for receiving LEDs 100, 102, 104 such that each of said LEDs is disposed in a corresponding one of said apertures and such that each of said LEDs is affixed in thermally conductive contact with a metal substrate ("metallic slug" 110) for the purpose of incorporating high powered LEDs into a light source (col. 1, lines 35-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the reference's device such that its flexible circuit 1 comprises apertures (122,124,126 as taught by Bohler) for receiving high-powered LEDs 100, 102, 104, as taught by Bohler, and such that each of said high powered LEDs is disposed in a corresponding one of said modified apertures and such that each of said LEDs is affixed in thermally conductive contact with tubular metal substrate 3. One would have been motivated to make such

Art Unit: 2818

a change for the purpose of utilizing at-the-time-the-invention-was-made available high-powered LEDs.

As for (i), since a change in size and shape is recognized as being within the level of ordinary skill in the art (MPEP 2144.04 [R-1], section IV), a modification to change the tubularly shaped cooling member 3, whose cross-section is shown in Fig. 2B, to have a length more than a width would have been obvious to one of ordinary skill in the art at the time the invention was made.

And finally, although the reference does not teach a clip for mounting the modified elongate thermally member as required by **claims 19, 40, and 61**, providing a clip for mounting said modified elongate thermally member is considered an intended use and therefore such providing would have been obvious to one of ordinary skill in the art at the time the invention was made.

### ***Response to Arguments***

2. Applicant's arguments with respect to **claims 1-12, 14-33, 35-54, and 56-63**, filed 10/24/2007, have been fully considered but they are not persuasive.
3. In response to applicant's arguments against the references individually (see, for example, pages 3, 4, 6), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).
4. In response to applicant's argument on page 6 that the examiner does not apply the Bohler reference with respect to independent claims 1, 2, 22, 23, 43, 43, and 44, it is pointed out that the examiner does apply the Bohler reference with respect to independent claims 1, 2, 22, 23, 43, 43, and 44, as detailed above. Applicant is reminded that an independent claim includes all limitations of the claim from which it depends; therefore, when the examiner refer to claim 15, for example as in the instant case, the examiner refers to all the limitations recited in claims 2,

Art Unit: 2818

14, and 15, because claim 15 depends on claim 14, which in turn depends on claim 2. If a teachings, the '819 reference in view of Bohler as in the instant case, renders claim 15 obvious, the teachings renders claim 2, claim 14, and claim 15 obvious.

5. With respect to Applicant's remark on page 7 that the '819 does not disclose "said thermally conductive member being configured to conduct heat away from said solid state light sources... to fluid contained by said thermally conductive member", it is respectfully pointed out that the reference does teach such a feature ("said thermally conductive member being configured to conduct heat away from said solid state light sources (LED 2) or said radiation emitting semiconductor devices (LED 2) or said radiation emitting solid state devices (LED 2) to fluid contained by said thermally conductive member (col. 4, lines 41-61)"). Specifically, the '819 reference teaches, col. 4, lines 49+: "As desired, the cylindrical cooling member 3 can also have a gas, such as air or a liquid coolant, flowing through it for further improvement of the heat elimination". Looking at the cross-section view of Fig. 2B (col. 4, lines 42+ : "The exemplary embodiment of FIG. 2B shows an axial cross-section through a rotating light of a type that can, be employed in emergency vehicles, for example. For the rotating light of FIG. 2B, the flex board 1 is provided with an array of LEDs 2 is laminated around a tubularly shaped, cylindrical, hollow cooling member 3"), it is clear that the reference teaches flowing a fluid, particularly when the fluid is a liquid coolant, through the inside of the hallow tubular cooling member 3 ( "a gas, such as air or a liquid coolant, flowing through it for further improvement of the heat elimination" ), because it is clear that the reference did not teach, as readily recognized by a person of ordinary skill in the pertinent art, flowing the liquid coolant through the electronic LEDs. Hence, the reference teaches "said thermally conductive member being configured to conduct heat away from said solid state light sources... to fluid contained by said thermally conductive member".

6. With respect to Applicant's citation and argument on page 9 about the change in size and shape, it is respectfully pointed out that, as far as the limitation "elongate" is concerned, the difference between the present invention and the present teachings is about mere scaling up and about relative dimensions. As clearly defined by Applicant, "elongate as used herein means

having more length than width" ("Specification", 05/01/2007), the difference between the present invention and the present teachings is about relative dimensions of length and width.

7. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In the instant case, the motivation to combine the references is clearly stated in the above rejections.

8. With respect to Applicant's argument on page 11 that the reference's cooling ribs are not the same as Applicant's claimed heat dissipation protrusions or extrusions, it is the examiner's stand that the reference's cooling ribs are functionally the same as Applicant's claimed heat dissipation protrusions or extrusions.

#### ***Conclusion***

9. **THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).**

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37



Art Unit: 2818

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

*Conclusion*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu-Tu Ho whose telephone number is (571) 272-1778. The examiner can normally be reached on 6:30 am - 3:00 pm, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven H. Loke can be reached on (571) 272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

01-02-2008

/Tu-Tu V. Ho/

Primary Examiner, A.U. 2818